Project Summary

I. INTRODUCTION

This source has applied for a significant modification to its Clean Air Act Permit Program (CAAPP) operating permit for its existing operation. The CAAPP is the program established in Illinois for the operating permits for significant stationary sources required by the federal Clean Air Act, as amended in 1990. The conditions in a CAAPP permit are enforceable by both the Illinois Environmental Protection Agency (Illinois EPA) and the USEPA.

The Akzo Nobel Surface Chemistry LLC chemical plant is located on South Tabler Road, south of U.S. Route 6 in Aux Sable Township, Morris, Illinois. The source operates an industrial organic chemicals manufacturing plant. The source manufactures various organic chemicals, including surfactants and fabric softeners.

This significant modification to the source's CAAPP permit incorporates conditions from Permit 97090063, revised on November 27, 2002. In Sections 7.6 and 7.7 of the CAAPP permit, the VOM emission factors for the Quaternary Ammonium Salt and Arquad Processes are revised based on stack test data, and production limits are revised based on the new factors. There is no increase in annual emission limits.

II. EMISSION UNITS

Significant emission units at this source are as follows:

Emission Unit	Description	Date Constructed	Emission Control Equipment
Nitrogen Derivative Treatment Unit			
310-301.1	Reactor/Treater	10/1/1983	Afterburner 396-003 (via vacuum separator, Mode A only)
310-301.2	Reactor/Treater	10/1/1983	Afterburner 396-003 (via vacuum separator, Mode A only)
310-602	Clay Storage Silo and Conveyor System	10/1/1983	Clay Silo Vent Filter 310-602j
310-904	Treater Vacuum System	10/1/1983	Afterburner 396-003 (Mode A only)
310-303	Intermediate Slurry Tank	10/1/1983	Afterburner 396-003 (Mode A only)

Emission Unit	Description	Date Constructed	Emission Control Equipment
310-304.1	Clay Recycle Slurry Tank	10/1/1983	Afterburner 396-003 (Mode A only)
310-304.2	Clay Recycle Slurry Tank	10/1/1983	Afterburner 396-003 (Mode A only)
310-601	Rotary Vacuum Filter System	10/1/1983	Afterburner 396-003 (via vacuum separator, Mode A only)

Emission Unit	Description	Date Constructed	Emission Control Equipment
310-603	Rotary Vacuum Filter System	10/1/1983	Afterburner 396-003 (via vacuum separator, Mode A only)
310-601a	Rotary Vacuum Separator	10/1/1983	Afterburner 396-003 (Mode A only)
310-603a	Rotary Vacuum Separator	10/1/1983	Afterburner 396-003 (Mode A only)
Nitrile Unit			
302-004	Nitrile Reactor	1973	None
302-002	Nitrile Reactor Condenser	1973	None
302-010	Nitrile Vent Stripper	1973	None
302-011	Vent Condenser	1973	None
302-012	Nitrile Rerun Tank N8	1973	Afterburner 396-003 (Mode A only)
302-014	Vaporizer	1973	None
302-020	Nitrile Catalyst Chamber (Mode A only)	1973	None
302-022	Nitrile Catalyst Chamber (Mode A only)	1973	None
302-030	Nitrile Catalyst Chamber (Mode A only)	1973	None
302-036	Nitrile Condensing Still	1973	None
302-041	Ammonia Scrubber/Absorber	1973	Afterburner 396-003 or Flare (Mode A or B)
302-047	Ammonia Still	1973	None
302-050	Ammonia Still Reflux Condenser	1973	None
302-054	Carbon Dioxide Purge Flashpot	1973	None
302-068	Ammonia Knock-Out Drum	1973	None
302-078	Pitch Vent Stripper	1973	None
Continuous Hydrogenation Unit			
303-004.1	Hydrogenation Reactor	10/1973	None
303-004.2	Hydrogenation Reactor	10/1973	None
303-002.1	Recycle Gas Compressor	10/1973	Afterburner 396-003 (Mode A) and Flare 396-701

Emission Unit	Description	Date Constructed	Emission Control Equipment
303-002.2	Recycle Gas Compressor	10/1973	Afterburner 396-003 (Mode A) and Flare 396-701
303-006	Knock-Out Drum	10/1973	Afterburner 396-003 (Modes A and C) and Flare 396-701
303-008	Recirculation Cooler	10/1973	None
303-009	Recirculation Cooler	10/1973	None
303-010	Flash Drum Preheater	10/1973	None
303-011	Ammonia Flash Drum	10/1973	None
303-012	Ammonia Condenser	10/1973	None
303-013	Ammonia Accumulator	10/1973	Afterburner 396-003 (Modes A and C) and Flare 396-701
303-016	Amine Surge Drum	10/1973	Afterburner 396-003 (Modes A and C) and Flare 396-701
303-019	Amine Cooler	10/1973	None
303-020	Dump Tank H-5	10/1973	Afterburner 396-003 (Modes A and C) and Flare 396-701
Batch Hydrogenation Unit			
307-004	Batch Hydrogenation Reactor R-1	10/1973	None
306-004	Batch Hydrogenation Reactor R-2	10/1973	None
306-001	North Catalyst Mix Tank (R-1 and R-2 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only)
306-013	Steam Ejector (R-1 and R-2 Reactor Trains)	10/1973	None
306-012	North Schenk Filter (R-1 and R-2 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only)
306-014	Surface Condenser (R-1 and R-2 Reactor Trains)	10/1973	None
306-015	North Hotwell 306-015 (R-1 and R-2 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only) and Flare 396-701
306-019	North Drop Tank H6 (R-1 and R-2 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only) and Flare 396-701
306-029	North Polishing Filter (R-1 and R-2 Reactor Trains)	10/1973	None

Emission Unit	Description	Date Constructed	Emission Control Equipment
306-301	Batch Hydrogenation Reactor R-3	10/1973	None
306-302	Batch Hydrogenation Reactor R-4	10/1973	None
306-303	South Catalyst Mix Tank (R-3 and R-4 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only)
306-304	South Drop Tank H7 (R-3 and R-4 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only) and Flare 396-701
306-305	South Hotwell (R-3 and R-4 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only) and Flare 396-701
306-503	Steam Ejector 306-503 (R-3 and R-4 Reactor Trains)	10/1973	None
306-503C	Surface Condenser (R-3 and R-4 Reactor Trains)	10/1973	None
306-504	South Schenk Filter (R-3 and R-4 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only)
306-505	South Polishing Filter (R-3 and R-4 Reactor Trains)	10/1973	None
313-301	Batch Hydrogenation Reactor R-6	3/1988	None
313-303	Drop Tank H-11 (R-6 Reactor Train)	3/1988	Afterburner 396-003 (Mode A only) and Flare 396-701
313-304	Catalyst Mix Tank R-6 (R-6 Reactor Train)	3/1988	Afterburner 396-003 (Mode A only)
313-305	Precoat Tank (R-6 Reactor Train)	3/1988	None
313-307	Knock-Out Drum R-6 (R-6 Reactor Train)	3/1988	Afterburner 396-003 (Mode A only) and Flare 396-701
313-310	Recycle Gas Scrubber (R-6 Reactor Train)	3/1988	None
313-401	Precondenser (R-6 Reactor Train)	3/1988	None
313-402	Surface Condenser (R-6 Reactor Train)	3/1988	None
313-503	Funda Filter R-6 (R-6 Reactor Train)	3/1988	Afterburner 396-003 (Mode A only)

Emission Unit	Description	Date Constructed	Emission Control Equipment
313-504	Polishing Filter (R-6 Reactor Train)	3/1988	None
313-506	Steam Ejector (R-6 Reactor Train)	3/1988	None
313-601	Recycle Gas System Compressor (R-6 Reactor Train)	3/1988	None
306-306	Reactor R-5	10/1985	None
306-307	Hotwell (R-5 Reactor Train)	10/1985	Afterburner 396-003 (Mode A only)
306-601	Vacuum System (R-5 Reactor Train)	10/1985	None
306-021	Precoat Tank (R-1, R-2, R-3, and R-4 Reactor Trains)	10/1973	None
306-044	Aqueous Ammonia Surge Tank (R-1, R-2, and R-6 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only) and Flare 396-701
306-507	Funda Filter (R-1, R-2, R-3, and R-4 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only)
307-016	DM Settling Tank H-1 (R-1, R-2, R-3, and R-4 Reactor Trains)	10/1973	Afterburner 396-003 (Mode A only)
Ester Process			
309-326	Reactor	6/1994	None
309-428	Process Condenser	6/1994	None
309-327	Condensate Receiver	6/1994	None
309-603	Vacuum System	6/1994	Afterburner 396-003 (Mode A only)
309-607	Vacuum System	6/1994	Afterburner 396-003 (Mode A only)
309-604	Hopper/Filter	6/1994	None
Ester Process II			
316-304	Reactor	11/1998	None
316-408	Process Condenser	11/1998	None
316-305	Condensate Receiver	11/1998	None
316-603	Vacuum System	11/1998	Afterburner 396-003 (Mode A only)
316-604	Hopper/Filter	11/1998	None
Arquad Production Area (Quaternary Ammonium Salt Process)			
309-321	Reactor	6/1994	None
309-322	Drop Tank	6/1994	Methyl Chloride Absorber System 309-325

Emission Unit	Description	Date Constructed	Emission Control Equipment
309-324	Recovery Tank	6/1994	(equipment is a part of 309-325)
309-325	Methyl Chloride Absorber Column	6/1994	(equipment is a part of 309-325)
309-330	Process Tank	6/1994	None
309-423	Water-cooled Condenser	6/1994	(equipment is a part of 309-325)
309-424	Refrigerated Glycol-chilled Condenser	6/1994	(equipment is a part of 309-325)
309-323	Vent Separator	6/1994	(equipment is a part of 309-325)
309-601	Liquid Ring Pump Package	6/1994	(equipment is a part of 309-325)
Arquad Production Area (Quaternary Ammonium Salt Process II)			
316-300	Reactor	11/1998	None
316-301	Reactor	11/1998	None
316-302	Drop Tank	11/1998	Methyl Chloride Absorber System 316-309
316-313	Drop Tank	11/1998	Methyl Chloride Absorber System 316-309
316-308	Recovery Tank	11/1998	(equipment is a part of 316-309)
316-309	Methyl Chloride Absorber Column	11/1998	(equipment is a part of 316-309)
316-303	Process Tank	11/1998	None
316-402	Water-cooled Condenser	11/1998	(equipment is a part of 316-309)
316-409	Water-cooled Condenser	11/1998	(equipment is a part of 316-309)
316-403	Refrigerated Glycol-chilled Condenser	11/1998	(equipment is a part of 316-309)
316-410	Refrigerated Glycol-chilled Condenser	11/1998	(equipment is a part of 316-309)
316-307	Vent Separator	11/1998	(equipment is a part of 316-309)
316-311	Vent Separator	11/1998	(equipment is a part of 316-309)

Emission Unit	Description	Date Constructed	Emission Control Equipment
316-601	Liquid Ring Pump Package	11/1998	(equipment is a part of 316-309)
Arquad Production Area (Arquad Process)			
309-301	Reactor	10/1973	Methyl Chloride Absorber System 309-313
309-305	Drop Tank	10/1973	Methyl Chloride Absorber System 309-313
309-308.1	Bleach Tank A25	10/1973	Wash Tank Condenser 309-406 or 309-431
309-308.2	Bleach Tank A26	10/1973	Wash Tank Condenser 309-406 or 309-431
309-310	Vent Compressor Knock-Out Pot	10/1973	(equipment is a part of 309-313)
309-312	Wash Tank	10/1973	Wash Tank Condenser 309-406 or 309-431
309-317	Wash Tank	8/1999	Wash Tank Condenser 309-406 or 309-431
309-313	Methyl Chloride Absorber Column	10/1973	(equipment is a part of 309-313)
309-314	Diluent Tank	10/1973	(equipment is a part of 309-313)
309-315	Diluent Tank	10/1973	(equipment is a part of 309-313)
309-413	Diluent Tank	10/1973	(equipment is a part of 309-313)
309-401	Water-cooled Condenser	10/1973	(equipment is a part of 309-313)
309-409	Refrigerated Glycol-chilled Condenser	10/1973	(equipment is a part of 309-313)
309-501	Filter	10/1973	None
309-901	Methyl Chloride Recovery Vacuum/Compressor	10/1973	(equipment is a part of 309-313)
309-332	Water Scrubber	8/1999	None
309-406	Wash Tank Condenser	8/1999	None
309-431	Wash Tank Condenser	8/1999	None

Emission Unit	Description	Date Constructed	Emission Control Equipment
Storage Tanks			
W-2	Wastewater Surge Tank	10/1973	None
H-4	Formalin Tank	10/1973	None
H-2	Acrylonitrile Tank	10/1973	None
W-4	Waste Fat Storage	9/1978	None
H-3	Formcel Tank	10/1973	None
Fuel Combustion Equipment			
NB	Nebraska Steam Boiler Model #NS-C-37	6/1978	None
DB	Dowtherm Boiler 388-001	10/1973	None
KB	Keystone Steam Boiler	8/1982	None
Fugitive VOM Emissions	Leaks from valves, flanges, seals etc.		None

III. EMISSIONS

This source is required to have a CAAPP permit since it is a major source of emissions.

For purposes of fees, the source is allowed the following emissions:

Permitted Emissions of Regulated Pollutants

Pollutant	Tons/Year
Volatile Organic Material (VOM)	189.20
Sulfur Dioxide (SO_2)	211.20
Particulate Matter (PM)	12.80
Nitrogen Oxides (NO_x)	646.60
HAP, not included in VOM or PM	----
TOTAL	1,059.80

This permit is a combined Title I/CAAPP permit that may contain terms and conditions which address the applicability, and compliance if determined applicable, of Title I of the Clean Air Act and regulations promulgated thereunder, including 40 CFR 52.21 - federal Prevention of Significant Deterioration (PSD) and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Any such terms and conditions are identified within the permit by T1, T1R, or T1N. The source has requested that the Illinois EPA establish or revise such conditions in a Title I permit, consistent with the information provided in the CAAPP application. Any conditions established in a construction permit pursuant to Title I and not revised or deleted in this permit, remain in effect pursuant to Title I provisions until such time that the Illinois EPA revises or deletes them.

IV. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with the Illinois Pollution Control Board's emission standards. The Board's emission standards represent the basic requirements for sources in Illinois.

All emission sources in Illinois must comply with the federal New Source Performance Standards (NSPS). The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

All emission sources in Illinois must comply with the federal National Emission Standards for Hazardous Air Pollutants (NESHAP). The Illinois EPA is administering NESHAP in Illinois on behalf of the United States EPA under a delegation agreement.

V. PROPOSED PERMIT

CAAPP

A CAAPP permit contains all conditions that apply to a source and a listing of the applicable state and federal air pollution control regulations that are the origin of the conditions. The permit also contains emission limits and appropriate compliance procedures. The appropriate compliance procedures may include inspections, work practices, monitoring, record keeping, and reporting to show compliance with these requirements. The Permittee must carry out these procedures on an on-going basis.

Title I

A combined Title I/CAAPP permit contains terms and conditions established by the Illinois EPA pursuant to authority found in Title I provisions, e.g., 40 CFR 52.21 - federal Prevention of Significant Deterioration (PSD) and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Notwithstanding the expiration date on the first page of the permit, the Title I conditions remain in effect pursuant to Title I provisions until the Illinois EPA deletes or revises them in accordance with Title I procedures.

Because this source is located in the Chicago ozone non-attainment area and emits volatile organic material (VOM), the permit includes conditions to implement the Emissions Reduction Market System (ERMS). The ERMS is a market-based program designed to reduce VOM emissions from stationary sources to contribute to reasonable further progress toward attainment, as further described in Section 6.0 of the permit. The permit contains the Illinois EPA's determination of the source's baseline emissions and allotment of trading units under the ERMS, and identifies units not subject to further reductions.

VI. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that this source's permit application meets the standards for issuance of a CAAPP permit. The Illinois EPA is therefore proposing to issue a CAAPP permit, subject to the conditions proposed in the draft permit.

Comments are requested on this proposed action by the Illinois EPA and the proposed conditions on the draft permit. If substantial public interest is shown in this matter, the Illinois EPA will consider holding a public hearing in accordance with 35 Ill. Adm. Code Part 166.

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